CLAIMS

What is claimed is:

1. An energy information system which allows an energy information service provider to measure energy usage by a customer at a discrete location, said system including:

a sub-measurement board which receives voltage and current signals representative of energy usage at the discrete location, said sub-measurement board outputs a load profile of said energy usage;

a first communications network which transfers the load profile to the energy information service provider;

a processor located at the energy information service provider which processes the load profile; and

a second communications network which provides the customer access to the processed load profile for remote viewing of the load profile by the customer.

2. The system defined in Claim 1 in which the first communications network is one of a RF transmitter/receiver, a communication line or a satellite network; and in which the second communications network is one of a RF transmitter/receiver, a communication line or a satellite network.

3. The system defined in Claim 1 in which the sub-measurement board includes a microprocessor which calculates the energy usage of individual circuits of an energy distribution panel at the discrete location.

4. The system defined in Claim 1 in which the sub-measurement board is connected to an utility meter and receives an utility usage signal therefrom, said sub-measurement board outputs cumulative utility usage information.

5. The system defined in Claim 4 in which the utility meter is one of an electric meter, water meter or gas meter.

6. The system defined in Claim 1 in which the sub-measurement board is connected to an energy distribution panel located at the discrete location and is capable of receiving at least three voltage signals and at least nine current signals from said distribution panel.

7. The system defined in Claim 6 further including a current transformer circuit for transforming the current signals into voltage signals which are representative of said current signals.

8. The system defined in Claim 1 in which the sub-measurement board includes a display for outputting energy usage at the discrete location.

9. A method of calculating energy information of individual circuits of an energy distribution panel, said method including the steps of:

inputting a voltage signal from one of a plurality of the individual circuits of the distribution panel into a sub-measurement board;

inputting a current signal from one of the plurality of individual circuits of the distribution panel into the sub-measurement board;

comparing the voltage signal to the current signal to determine whether the voltage signal is connected to the same individual circuit of the distribution panel as the current signal; and

calculating the energy information of the individual circuit of the distribution panel when the individual circuit of the voltage signal matches the individual circuit of the current signal.

10. The method defined in Claim 9 further including the step of inputting a plurality of voltage and current signals into the sub-measurement board.

11. The method defined in Claim 10 further including the step of inputting each of the plurality of voltage signals into a microprocessor circuit of the sub-measurement board; cycling through the plurality of current signals alternately inputting one current signal at a time into the microprocessor circuit; and comparing the one current signal to each voltage signal to determine which of the voltage signals is connected to the same individual circuit as the one current signal.

12. The method defined in Claim 9 further including the steps of converting the voltage signal into a digital voltage signal and converting the current signal into a digital current signal.

13. The method defined in Claim 12 further including the step of inputting the digital current signal and digital voltage signal into a microprocessor, said microprocessor compares the voltage signal to the current signal to determine whether the voltage signal is connected to the same individual circuit of the distribution panel as the current signal.

14. The method defined in Claim 13 further including the step of amplifying the voltage signal prior to converting the voltage signal into a digital voltage signal by inputting the voltage signal into a voltage amplifier circuit.

15. The method defined in Claim 14 further including the step of amplifying the current signal prior to converting the current signal into a digital current signal by inputting the current signal into a current amplifier circuit.

16. The method defined in Claim 13 further including the step of storing the digital current signal, the digital voltage signal and the energy information in a memory circuit.

17. The method defined in Claim 9 further including the step of outputting the energy information to a display.

18. A sub-measurement board for calculating load data of individual circuits of an energy distribution panel, said sub-measurement board including:

a voltage amplifying circuit connected to a voltage terminal of the distribution panel for receiving an input voltage signal, said voltage amplifying circuit amplifies the input voltage signal and outputs an amplified voltage signal;

a current amplifying circuit connected to a current terminal of the distribution panel for receiving an input current signal, said current amplifying circuit amplifies the input current signal and outputs an amplified current signal;

a switching circuit connected to the current amplifying circuit for receiving the amplified current signal, said switching circuit outputs a switched amplified current signal;

an analog-to-digital converter connected to the voltage amplifying circuit and the switching circuit for converting the amplified voltage signal into a digital voltage signal and for converting the switched amplified current signal to a digital current signal;

a microprocessor connected to the analog-to-digital converter for receiving the digital voltage signal and the digital current signal, said microprocessor calculates the load data of individual circuits of the energy distribution panel; and

an output device for outputting the calculated load data of the individual circuits of the energy distribution panel.

19. The sub-measurement board defined in Claim 18 in which the voltage amplifying circuit is connected to a plurality of voltage terminals of the distribution panel for receiving a plurality of input voltage signals, said voltage amplifying circuit amplifies the plurality of voltage signals and outputs a plurality of amplified voltage signals.

20. The sub-measurement board defined in Claim 19 in which the current amplifying circuit is connected to a plurality of current terminals of the distribution panel for receiving a plurality of input current signals, said current amplifying circuit amplifies the plurality of current signals and outputs a plurality of amplified current signals.

21. The sub-measurement board defined in Claim 20 in which the plurality of amplified current signals are input into the switching circuit, said switching circuit cycles through the amplified current signals to alternately output one of the plurality of amplified current signals to the A/D converter during each cycle.

22. The sub-measurement board defined in Claim 18 further including a first memory circuit connected to the microprocessor, said memory circuit stores computer instructions which are loaded into the microprocessor and which instruct the microprocessor to compare the digital current signal to the digital voltage signal and determine whether the digital current signal and digital voltage signal are input into the sub-measurement board from a common individual circuit of the energy distribution panel.

23. The sub-measurement board defined in Claim 22 further including a second memory circuit connected to the microprocessor for storing the digital voltage signal, the digital current signal and the calculated load data.

24. The sub-measurement board defined in Claim 18 further including an isolation circuit for isolating the sub-measurement board from external electric and magnetic fields.